

Mr. Dennis G. Majors  
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Testimony  
Before the Subcommittee on Water and Power  
Committee on Resources  
United States House of Representatives

Oversight Hearing on a Comprehensive  
Evaluation of the CALFED Program  
June 28, 2003

Thank you Chairman Calvert. I am currently an Engineering Program Manager with the Metropolitan Water District of Southern California, with responsibilities for guiding implementation of the CALFED Program. For two years, from 2000 to 2002, I was also CALFED's Delta Implementation Manager, where I gained detailed knowledge of the concept and operations involved in moving water south, across the Delta's system of channels and rivers, to the federal and state water export facilities. The attached Disclosure Statement provides other supporting information on my qualifications relevant to this testimony.

## **Summary and Conclusions**

Under CALFED, the concept of conveying water across the Delta to export facilities is called the Through Delta Plan. This is CALFED's preferred alternative, contained in the CALFED Bay Delta Program's Record of Decision and Final EIR/EIS, issued in August 2000. The avoidance of adverse effects to Delta farming or other interests is inherent in this Plan.

The conveyance of water through the Delta to export facilities in the south comes with a commitment to protect Delta interests with a vital stake in its water supply and water quality to maintain the integrity of their operations. CALFED will implement the Through Delta Plan through planned flood control improvements in the north Delta, ongoing levee and dredging programs throughout the Delta, dredging in the south Delta, and the use of permanent operable barriers in the south Delta to protect the region's water quality and water supply. Appropriate habitat improvements will be undertaken to maintain the integrity of the Delta system as a whole and a balanced approach to CALFED implementation.

Metropolitan Water District strongly supports and is dedicated to the success of the Through Delta Plan and will take all appropriate actions to ensure its implementation. This Plan includes improvements in the north and south Delta, which are summarized in the numbered items below and illustrated on Tab 1. Items 4 through 9 of this list constitute the first major implementation package under the CALFED program, and will substantially improve water supply reliability for Southern California and other water users south of the Delta. These measures are highly cost effective, can be accomplished in the near term, and include a careful plan to protect all Delta interests during their implementation and operation.

1. flow improvements at and near Delta Cross Channel,
2. flood control enlargements to north Delta channels,
3. cost effective measures to improve fish salvage in the south Delta,
4. ongoing levee improvements throughout the Delta,
5. dredging of channels in the south Delta,

6. maintenance dredging in various parts of the Delta to maintain channel capacity,
7. the construction of permanent operable barriers in the south Delta to maintain water quality and water supply to farming interests,
8. complementary ecosystem restoration measures, and
9. increased pumping capacity at south Delta export facilities to 8500 cubic feet per second.

I will review these improvements and show how they allow the conveyance of water toward export facilities, while protecting Delta interests integrally linked to its water supply, water quality and the integrity of the system as a whole.

### **North Delta Improvements**

In the north Delta, the Plan consists of several actions to address flood control, ecosystem, water quality, fisheries, and water supply reliability concerns. These include:

1. dredging and setback levees on the north and south forks of the Mokelumne River,
2. flood control and habitat restoration on McCormack-Williamson Tract,
3. restoring habitat along Georgiana Slough,
4. modifying Delta Cross Channel operations, and
5. the feasibility of constructing an additional diversion to the Delta from the Sacramento River.

At Tab 1, you will see these listed as Flood Control Improvements and Flow Improvements. I will highlight those facilities that most particularly improve flow capacity, channel integrity and water quality in the Delta.

### **Delta Cross Channel and the Through Delta Facility**

Near the Delta Cross Channel in the north Delta, studies will show how to operate the Cross Channel, along with other conveyance features in that area, to enhance water quality in the Delta while protecting fish—most particularly the downstream migration of salmon smolts and the upstream migration of salmon adults. We think CALFED can meet these goals in a complimentary manner in order to keep the Cross Channel open more of the year. The Cross Channel is now generally closed in the spring, open in the summer and fall, and partially open at other times of the year.

We will determine how flow splits east from the Sacramento River into the Cross Channel and Georgiana Slough, or west from the Sacramento River into Sutter and Steamboat Sloughs, will let us best maintain higher water quality in the Delta and keep fish away from areas where they could more easily be diverted from

the Sacramento River. Tab 1 shows the locations of these river and channel systems in the north Delta.

We expect these answers late next year, with facility improvements to follow.

### **Flood Control**

CALFED is planning flood control measures in the north Delta, which will result in a final planning document next year. The measures will substantially improve the flood carrying capacity of north Delta channels, such as the north and south forks of the Mokolumne River that lead into the Delta. This is done through combinations of dredging, levee raising, and levee set backs to gain the needed flood capacity. As an example, Tab 2 highlights the concept of a set back levee, which has the added benefit of encouraging habitat growth (graphic 1). It also shows how dredged materials removed from the channel can be placed on the backside of the levees to strengthen their integrity (graphic 2). These actions complement the movement of water through the Delta and improve water quality, and substantially improve the integrity of channel and levee systems to the benefit of farming and other interests.

### **Levees Improvements**

The Department of Water Resources has an active program to maintain and improve levees throughout the Delta on a continuous basis. This program is supported by state legislation that also requires net habitat enhancement with the improvement of any levee site. Levee improvements are thereby combined with unique habitat restoration opportunities. Levee integrity is enhanced, for example, by dredging material from the adjacent channel and placing dredged materials behind the levees for stability. Intermediate benches can also be provided on the waterside of the levees for greater stability. Habitat growth is encouraged in benched areas for restoration purposes and wave energy dissipation. Tab 2 further highlights the levee integrity improvements and habitat enhancement opportunities afforded by the levees program. Funding for such work is provided through the state subventions program on an annual basis, and through state bond issues, such as the recently passed Proposition 50. An active levees program is clearly complementary to the Through Delta Plan, proving added integrity to the conveyance of waters to export facilities, while guarding against catastrophic levee failures, causing severe damage to adjacent properties, and salinity intrusion and water quality degradation in the central Delta and at export facilities.

### **South Delta Improvements**

Plans for achieving a capacity of 8,500 cubic feet per second at Banks Pumping Plant in the south Delta would be accompanied by additional dredging on Old River, the installation of permanent operable barriers across Middle and Old

Rivers and Grant Line Canal, the placement of a fish barrier at the head of Old River, as well as ongoing levee improvements. In addition, where found that barriers may not adequately protect farming interests from supply inadequacies, a program to selectively deepen diversions and provide portable pumps would be employed, upstream and downstream of the barriers. The barriers and selective diversion deepening and portable pump systems give the assurance that, as pumping takes place at export facilities, there will not be adverse effects to water levels and or water quality of Delta farming interests. Channel integrity is better maintained, and fish are diverted further away from pumping operations. Funds are now in place through state bond issues to make these improvements.

### **Dredging**

Dredging the Old River north of the export pumps is necessary to avoid sediment movement and channel scouring during peak diversions. Here, levee stability is enhanced by only removing material in the center of the channel and by maintaining flatter side slopes on the channel. Dredge materials would be placed on the backside of levees to reinforce their integrity, in a manner typical of dredging operations and levee improvements that are taking place throughout the Delta. Tab 2, again demonstrates this concept. As noted above, state bond funds are in place to perform this work.

Erosion along the banks of channels in the Delta is also a real concern to interests in these areas. Dredging, by adding to the area of the channel, means that the same amount of water now doesn't have to move as fast, resulting in less erosion.

### **Barrier Operations for Delta Water Supply**

Permanent operable barriers are designed to pass water under their gates and upstream at high tide so waters can be trapped and held at these high levels for agricultural diversions while export pumping is taking place in the south Delta. Tab 3 shows how water is trapped at high tide (graphic 1) and then held at high enough levels to allow farmers to divert to their fields (graphic 2). Barriers will be placed on Middle River and Old River and at the Grant Line Canal. The gates on these barriers give great flexibility to change operations in rapid response to farmers' needs. The barriers are also designed to let water pass freely past them during the periods of natural or regulated high flow or when water levels are high enough without the need for flow control. They also have the effect of helping keep fish away from the pumps during periods of export pumping.

More recently, there have been water level problems, due to siltation, upstream of the temporary barriers. In such circumstances, it has been recognized that additional dredging would be required to deepen the channels and maintain water availability to agricultural diverters.

Operations at 8,500 cubic feet per second capacity are planned to begin initially under more limited capabilities of the temporary barriers, while fully protecting

south Delta agricultural diversion capability. These limitations mean the use of the 8,500 cubic feet per second capacity may occur less frequently than when permanent barriers are fully operational. The planning documents for this work will be completed next year, allowing construction of the permanent barriers to proceed. We clearly recognize the urgency of completing the design and construction of these barriers, so they are fully operational at the earliest possible date.

### **Barrier Operations for Delta Water Quality**

It is essential to maintain adequate water quality throughout the Delta when export operations are taking place. Current operations of the Central Valley Project and State Water Project facilities provide regulated releases of waters to ensure that salinity is pushed substantially seaward from the Delta, thereby improving water quality. Mandatory salinity requirements are in place at various river and channel locations to ensure that acceptable salinity levels are maintained. Exports are made strictly within these regulatory requirements, which are complementary with the need to deliver high quality water to downstream users.

We also recognize that water quality both upstream and downstream of the permanent operable barriers may degrade with lack of water movement. Here, the barriers themselves provide a useful tool, since small water releases can be made from time to time to maintain circulation and, therefore, adequate water quality. Tab 4 illustrates how circulation can be impeded at these barriers, if their gates are fully closed (graphic 1) and how a slight opening of the gates can help circulate water (graphic 2). In addition, the barriers have the potential to push fresh water to the main stem of the San Joaquin River and enhance quality.

### **Deepening of Agricultural Diversions**

We also know that in some of the areas of the Delta, both upstream and downstream of these barriers, certain agricultural diversions may not be low enough to reach the water levels even with the operable barriers in place. Selective deepening of these diversions will be done, in addition to the installation of operable barriers, so that water will be available under any circumstance. We are concerned about this because we know, for example, that being cut off from water for a period of days (or even hours in some cases) can cause substantial monetary damage to crops and farming operations. The state Department of Water Resources (DWR) has deepened several diversions over the last three or four years and more recently installed portable pumps where waters levels have dropped below agricultural diversion levels, primarily downstream of temporary barriers at Union Island. This diversion deepening and portable pump program provides added assurance to reliable agricultural supplies, and is expected to continue now and with the installation of permanent operable barriers, upstream and downstream of the barrier locations.

### **Maintenance Dredging**

Another condition that may occur with the installation of barriers is siltation buildup behind them over a period of time. It is recognized that such conditions can impair the permanent function of the barriers and the ability to maintain agricultural diversion capability on a continuous basis. It will be necessary to periodically evaluate this situation and remove sediment in channel reaches upstream of the barriers, keeping them operational and free from sediment, as necessary.

### **Temporary Barriers**

It is also important to note that DWR has installed a system of temporary barriers since 1991 to provide protection to Delta farmers. While the permanent operable barriers give more flexibility to assure water supply and quality to farming interests, the temporary barriers have nevertheless been very useful in maintaining supplies, particularly in the summer and fall when export deliveries from the Delta could affect farmers the greatest. The locations of these barriers are shown on Tab 5.

**DISCLOSURE REQUIREMENT**  
**Required by House Rule XI, clause 2(g)**  
**and Rules of the Committee on Resources**

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5. *Training, educational certificates, diplomas, degrees, and other educational experiences that add to qualifications to testify:* B.S. (cum laude) in civil engineering, California State University, Long Beach; Corps of Engineers' sponsored graduate studies in geotechnical engineering, University of California, Berkeley.
6. *Professional licenses, certifications, or affiliations relevant to qualifications to testify:* Registered Professional Engineer, Civil Engineering, State of California; Member, American Society of Civil Engineers, Washington, DC; Lifetime Member, Tau Beta Pi, National Engineering Honor Society, Knoxville, TN; Outstanding Achievement in Heavy Engineering Construction, The Beavers, Los Angeles (2001); Construction Management Award, American Society of Civil Engineers, Washington, DC (1999); Construction Management Award, Construction Management Association of America, Washington, DC (1999); Award of Excellence Winner (Man of the Year), Engineering News Record, New York City (1998); Grand Prize, National Academy of Environmental Engineers, Washington, DC (1998); President's Environmental and Conservation Challenge Award, President of the United States (1992).
7. *Employment, occupation, and work-related experiences relevant to qualifications to testify:* a seasoned civil engineer-manager with superior analytical and management skills in the planning, design, and construction of over \$3.0 billion in major water resource and other development projects under sensitive social and environmental conditions. In the past 20 years, Majors directly managed two of the most significant water resource projects in the United States: the \$2.1-billion Diamond Valley Reservoir in Riverside County for water supply and the \$1.4-billion Santa Ana River Mainstem Project for flood control in three Southern California counties. From 2000 to 2002, Majors was CALFED's Delta Implementation Manager. He is currently representing the Metropolitan Water District of Southern California in giving advice and support to the CALFED program.
8. *Representational capacity in providing testimony:* Engineering Program Manager, Metropolitan Water District of Southern California.



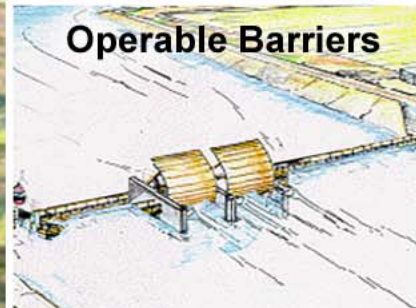
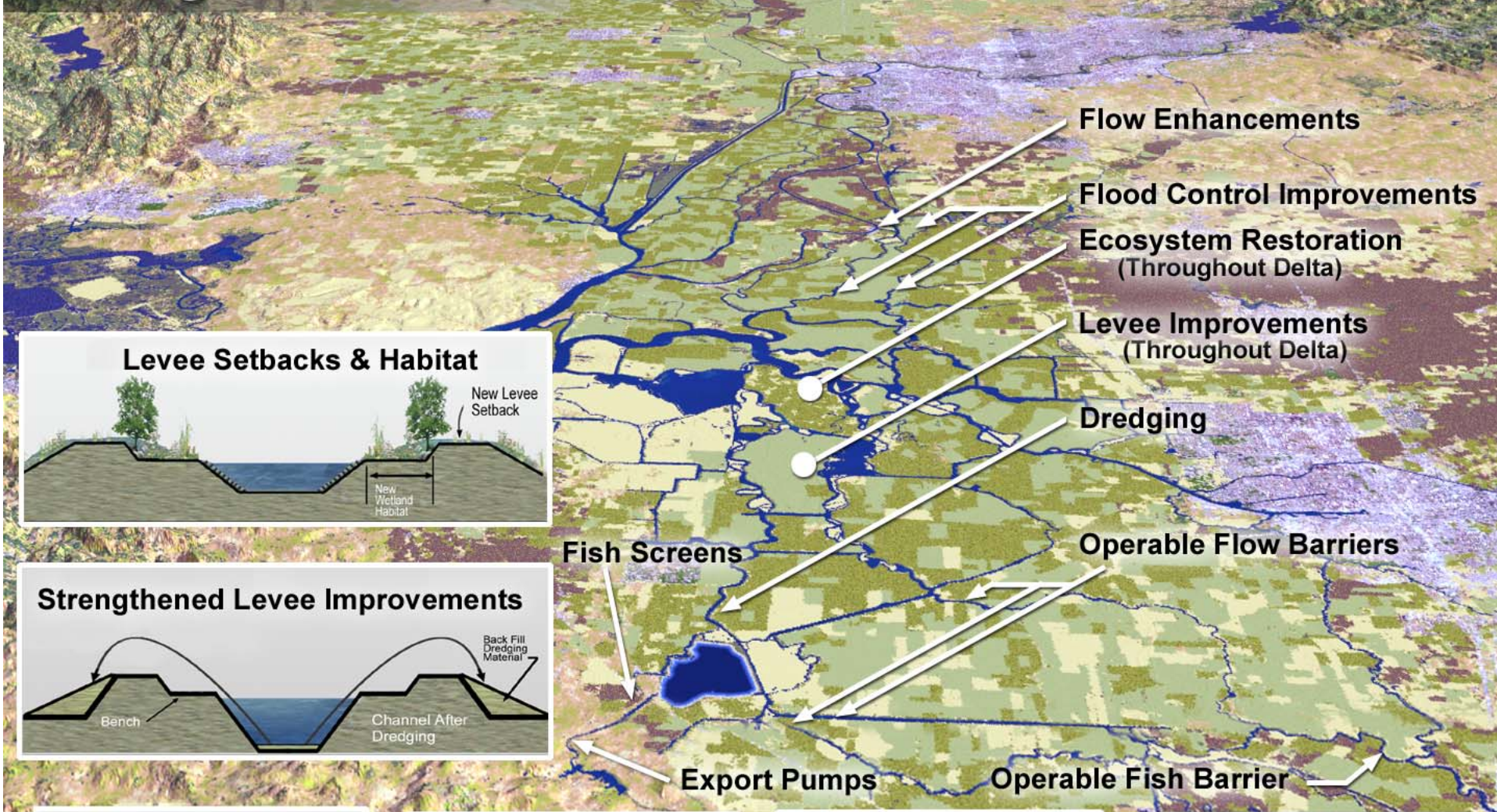
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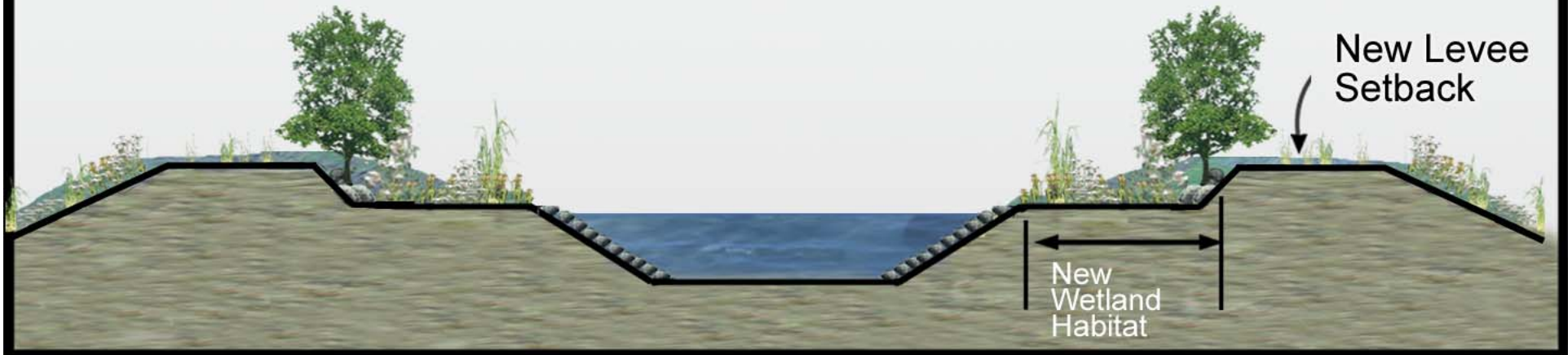
# Through Delta Improvements



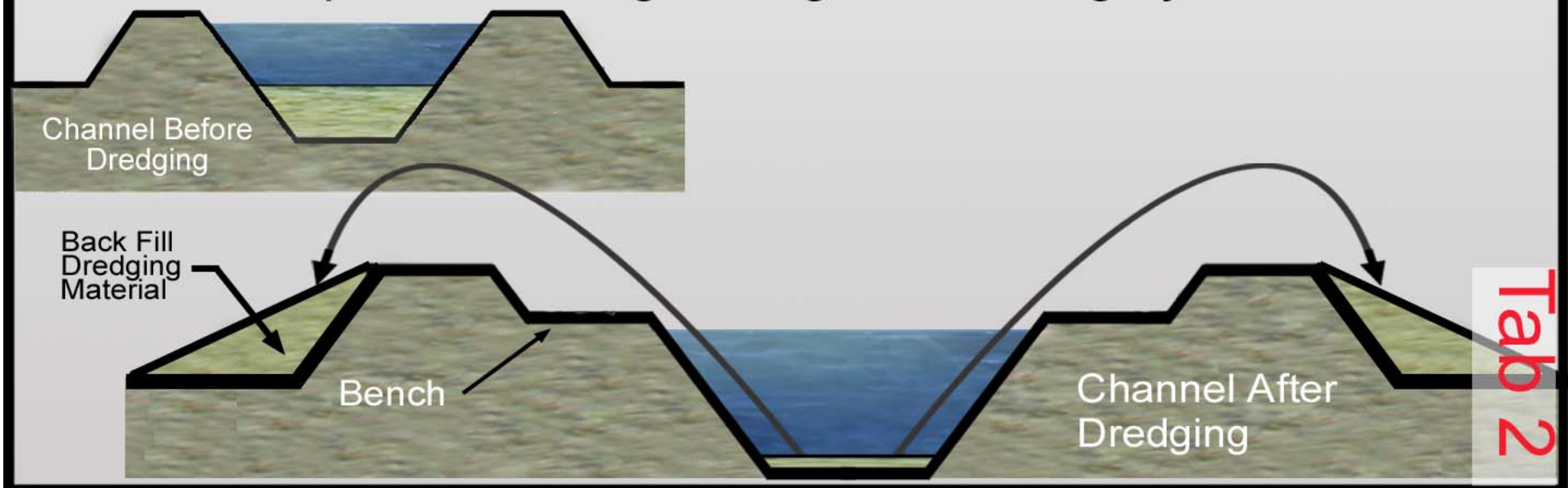


# Dredging & Levee Improvements

Graphic 1: Setback Levee with Habitat Improvements



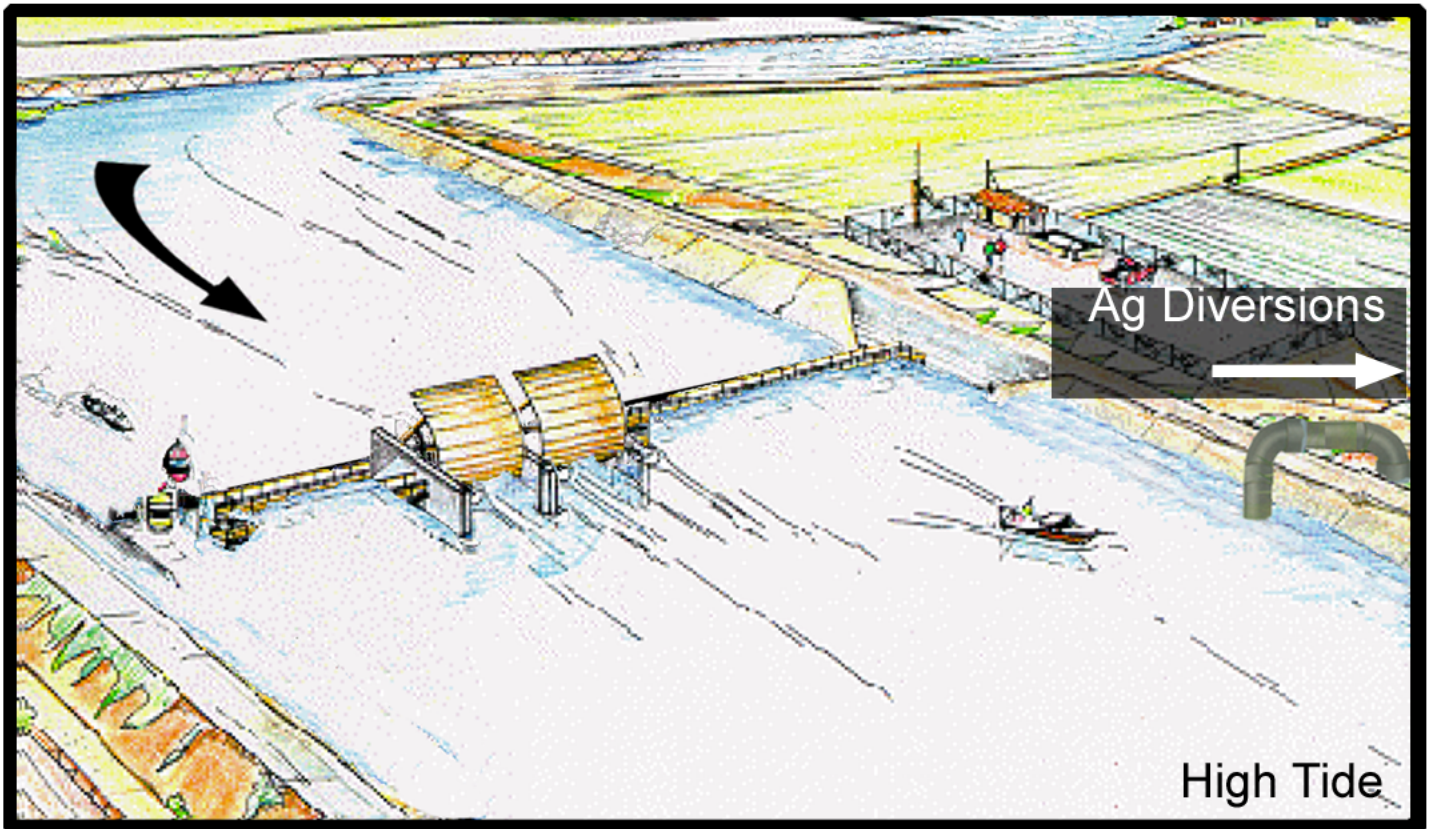
Graphic 2: Strengthening Levee Integrity



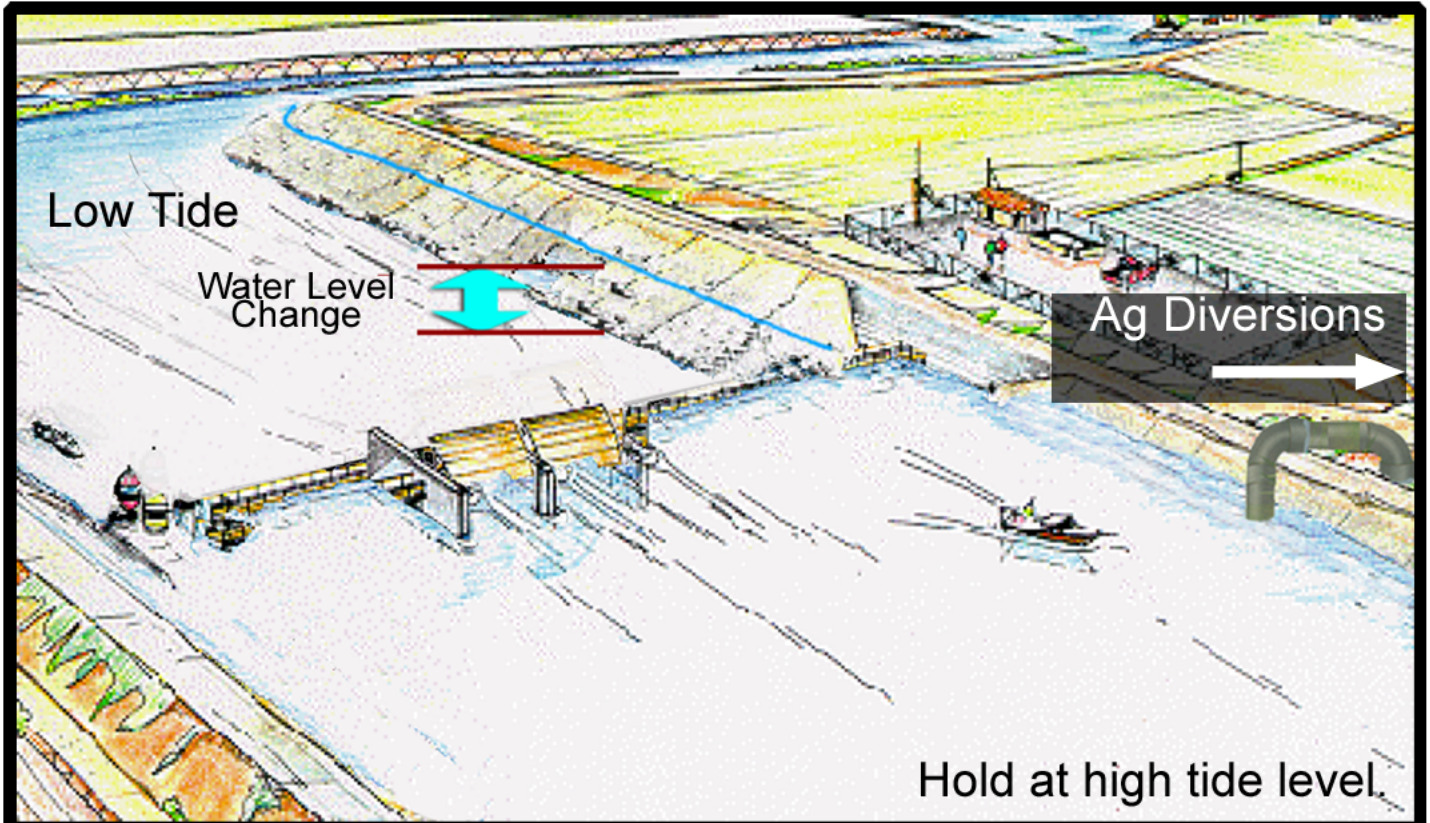


## Permanent Operable Barrier Concept

Graphic 1: Gate Open-Fill water behind barrier at high tide.

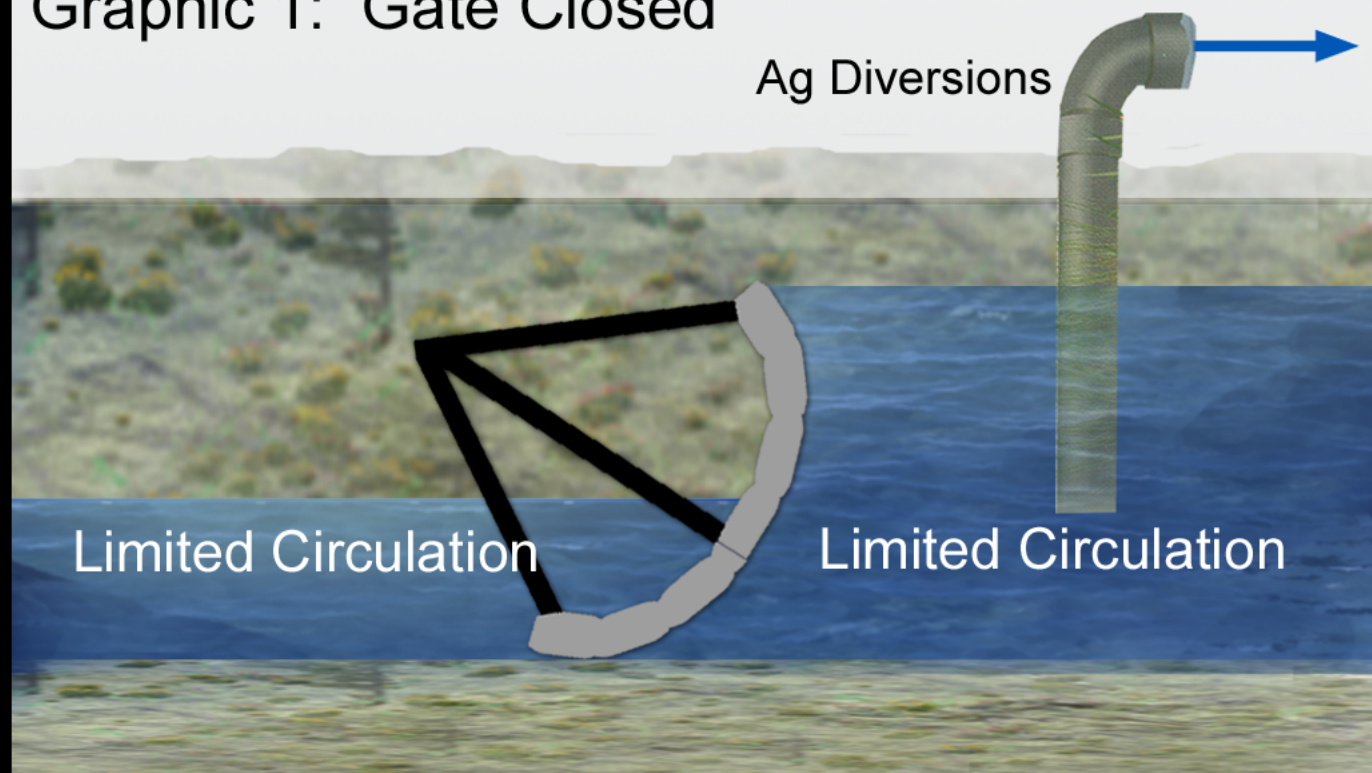


Graphic 2: Gate Closed-Hold water at low tide or during exports.

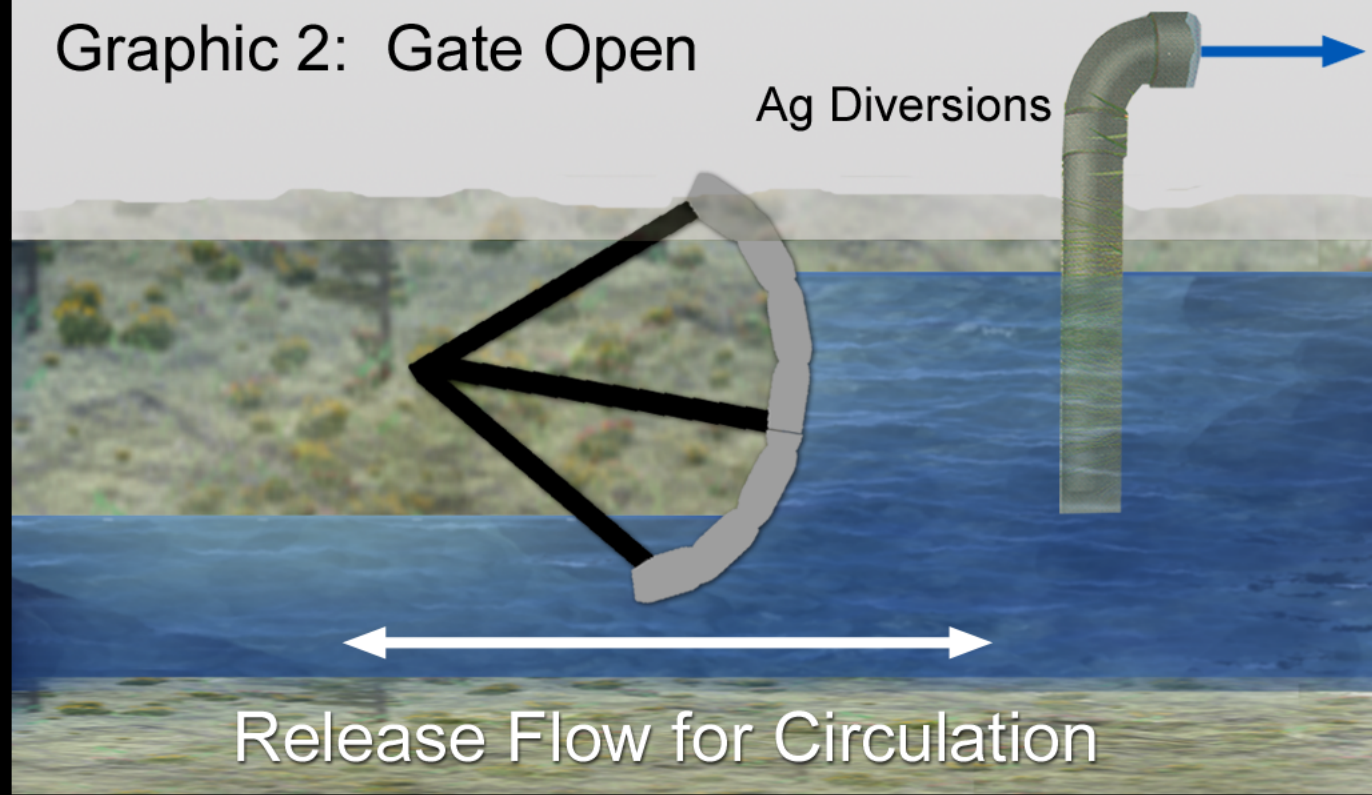




Graphic 1: Gate Closed



Graphic 2: Gate Open





# Temporary Barrier Locations



Grant Line Canal



Middle River



Head of Old River



Old River at Tracy

